Do Knowledge and New Technologies Need a New Epistemology?

Anne Des Bordes* and Samira Ferdi**

*Anne.Desbordes@enssib.fr
**Samira.Ferdi@enssib.fr

Abstract
We suggest a historical and epistemological treatment of the theme of access to information and its means: the changes in the means of access and the value given to knowledge in Western history from Plato to nowadays. The uses and access, as we will see, are conditioned both by ideology and technique, which are themselves in an iterative relationship. Which ideology today is our individual and collective connection to the world, to others, and to ourselves, what are the problematics, the stakes?

The question of the access to information concerns the students in the science of information, as future professionals in charge of gathering, handling, and spreading information, that is, to be more precise, having and giving access to it. But, on top of receiving technical training, the student also takes the responsibility of thinking about his or her own subject. Numerical development and network information change the whole society drastically, as well as individual or sociological practice, and appears as one of the main ethical stake for the world.

In the first part of our paper, we will examine the access to knowledge as well as the value assigned to this knowledge. In a second part we will see that it is generally admitted that in the information society individuals have the right of access to information. The exercise of this right enables citizens to keep their governments and public bodies accountable. Access to information is essential for citizen empowerment.

Introduction
The young history of the technology of the diffusion of information and the web has undergone drastic changes and development. First conceived in the limited sphere of public research (by and for the scientists of the CERN in Geneva), the web has become the intellectual and economical paradigm of our societies today, reshaping entire fundamental categories for the identity of our societies: from a sociological, individual, and political point of view, the changes in the connection to knowledge are due to these new techniques. Everyone seems to agree on this observation: the introduction of technological information has taken a «revolutionary» nature through the disruption introduced in the uses and connections to knowledge of a whole society.

At the basis of each revolution, of these restructurings of the whole of our relationship to the world, there is always a founder myth. Starting from the myth of the cave where the man of knowledge must free himself from the illusion of the earthly world to turn his eyes towards the light of knowledge, we are today in the myth of the cybercampus, the cyberspace where everyone exchanges information and knowledge in network.

To understand this upheaval better, and justify the word «revolutionary», we must look at things from a historical and comparative point of view.

Access to knowledge according to Plato: a vertical access

Plato's myth of the cave opens in the west a representation of the access to knowledge through a purely intellectual and dialectic movement. Man must look away from the deceptive appearances revealed by the earthly world (moving, changing, perishable) in order to contemplate the celestial Truths. Dialectic is this movement of the soul rising in stages up to the Ideas, the intelligible and perfect forms of phenomenons or Essences of all things. This classical system of representation lasted until the Renaissance: the universe parted between the celestial world of regular phenomenons and laws, and the changing and deceptive earthly world. Man takes on the status of contemplator of celestial Laws, drawing his inspiration from their unchanging truths for his own behaviour. The organisation of the city is thought of by Plato in the shape of an oligarchic Republic in which the philosophers are the leaders and transmitters of Knowledge. Ethics is based on an aristocracy of knowledge, the only one ensuring Virtue.

A new learned speech is progressively built in Europe as early as the XIII century (Thomas d'Aquin inaugurates the discrimination between what comes under Faith and what is in connection with human Reason, the truths accessible to intelligence) until it takes form in the XVII and dominates up to now: modern science has introduced a break with the classical way of thinking, we talk of a «scientific revolution».

Passage to a horizontal access: the Copernician revolution : each man has a direct personal access to knowledge

The revolution of the method of access to knowledge is due to several epistemological breaks with the classical vision of man and the means of access. Copernic's epistemological direction opens a new status for man and the Earth, at odds with the separate Aristotelician system. The decentration of Earth demands the abolition of the vertical split and a new epistemological horizon of access for all and by all. Being subjected to the same physical laws as the other planets, Earth can be applied mathematical laws. That is what Kepler and Galileo will do later. The same laws can explain physical and astrophysical phenomenons. It is therefore possible for man to take charge of his own means of access to knowledge: Galileo builds his own telescope, and practical experiment becomes the new paradigm of the building of Knowledge. One measures, one checks; one experiments in order to confirm hypothesis: the deductive method replaces simple passive observation.

Society is then still being organised in a hierarchic way but, little by little, the democratisation of the means of access evolves until it carries weight politically. From the XVI to the century of Lights and the French Revolution, the means of access are considered in a democratic way: the mass circulation of ideas and knowledge is made possible by printing, a vast technique of production and circulation of ideas. Schools open as well as libraries. Naudé is one of the thinkers of this democratisation of the means of access with the idea of a universal and public library. He writes in 1627 in the *Advis pour dresser une bibliothèque*: «The library is a place for the public practice of reason.»

The ethics will mainly be «rationalist»: the Rousseau's ideology of Reason, which raises man from his initial condition will be both in the scientific and political discourse. The state will then takes in charge the instruction and training of enlightened citizens.

In this new perspective, man defines himself as a being of reason, no longer as a receptacle but as a producer. It is up to him to build up his Knowledge. Nowadays, technique makes it more possible to materialize this conception.

The collaborative and community internet: the Internauts generate the contents.
The new paradigm of the means of access is viewed in relation to the new uses made possible by technique. From now on, we are in the era of collaboration, which completely reshapes the concept of Knowledge and its means of access. We suggest a few definitions, and then the potential problematics of this new conceptual «revolution». We intentionally exclude the question of scientific research, as it is unnecessary to mention the benefits of the network for the communities of scientists. We prefer to concentrate essentially on the social and individual aspect of the entry of the internet in our everyday life.

A few definitions to understand the Web 2.0 : free services, involvement of users, available programmes.

- *Crowdsourcing*: the Internauts answer the practical questions of other visitors in very precise fields of competence. Example : the Wiki-type encyclopaedias.
- *Folksonomy*: «sharing of favourites», a method of classification of sites according to their popularity among the Internauts of the same community.
- *Social networking*: a community of Internauts sharing the same interests and practicality in line.

These new uses illustrate an original ideology of learning socially created and thought out: the ideology of the web versus the ideology of a learning surpassing the individual.
A few problematics allow to open a debate:

Are the means of access at everyone's level?
We can distinguish three elements characteristic of the society of information: a public, a service, a device, designating three activities: access, diffusion, making these activities possible. The device comes in several dimensions: material, organizational, institutional and intellectual, designating in fact the means for the public to have access to these contents.

This device can be considered as the problematic element of today's ideology as it is presented (free, democratic, on the network): indeed it introduces a hierarchy, an inadequacy between the actors: even more numerous services, a public more and more dependent on the means of appropriation. Besides, we usually note a «fracture» within the public, between those connected to the network and who have access, and those who cannot afford it. To have access still depends on material conditions and therefore puts a brake on the ideology of a network for everyone.

The paradigm of the access to the network is therefore significant only if the device, as well as the services, becomes more democratic. We still have to know if, dependent on political decisions and actions, this democratisation will really be effective in an egalitarian way in the world.

Will the network system last?
The theorists of the transformation of society from an economical market to a network society bring up the economical problem; how to provide the access to all (at school, in the regions, in poor countries), and how to perpetuate the services. The professionals of

marketing face a new challenge with web 2.0: how to convert a public success into an economical success?

Having access, yes, but to what?

If we postulate that indeed the access is made easier for those who have the system, how can we define these original processes of appropriation and production of knowledge by everyone? Although the processes fill with enthusiasm the militants of the internet as a new space of democratic knowledge, this justified infatuation must not lead us to give up criticism and questions but to take a reflexive approach to understand the world in which we live and the ideology beneath it, the knowledge which bears it. In fact, philosophers, religious people, or even teachers or parents are no longer in possession of knowledge as it is understood today: knowledge is built up by everyone, in a systemic space. The hierarchy between those who know and pass on and those who learn has given way to the network.

The question could be that of the risk of levelling: could the popularization of the web 2.0 lead to a questioning of the very concept of knowledge? In Greek antiquity, knowledge was reserved to philosophers. In the Renaissance, the ideology of knowledge for all made the access more democratic. As for us, haven't we switched from an aristocratic system to «mass knowledge», in the same way as we spoke of «mass culture» 15 years ago? The expression «information society» contains this modification of the definition of knowledge: it is no longer a knowledge transcending the individual (like the ideas belonging to the world of gods, the teachings of History), but a knowledge built up in network, shared, and which develops according to individuals and communities of individuals. The exchanges on the blogs, the involvement of the Internauts, display in front of our eyes this change in the paradigm of access but also in the meaning of knowledge. Today, the useful and exploitable knowledge which is thought-after is no longer religious (as in the classical period), historical (as in the Renaissance), or rational teaching (as in the Lumières period), allowing each person to define oneself in the world, but information conditioned within the context of a job (skills) or of leisure (general knowledge), enabling companies to stand on the market and people to define themselves socially.

Worldwide exchanges take the aspect of a giant buzzing of interconnections in which each person can write commentaries or autobiographic stories, again leaving it in the hands of a small number of people to generate the informative root contents. A new aristocratic or even manipulating elite can prove all the more hardy and efficient since it is hidden behind the pomp of cyberspace where tolerance and condescension let «conversation» take place freely.

Ethics in the time of the Internet

Ethical assessment is thought out through the prism of the notion of common welfare and total development of humanity. From now on, in view of the evolution of our relationship to the world with regard to the different scientific and technical paradigms and to the uses seen up to now, this question arises: what is this transcendence which places each of us in relation to the world, to others, to ourselves? The ideology of a transcendence founded on intercultural exchanges, on the understanding of the world and the involvement in politics made possible by the internet must not let us forget, as well as its non-efficiency, the risks of appropriation and manipulation (of services, information and device). It is therefore advisable not to subscribe too fast to this ideology of the net in order to remain suspicious towards the diffused information. Although access has become easier thanks to new technical means, a critical mind is all the more necessary : we must discriminate information from rumour,

science from vulgarisation, enlightened knowledge from vague knowledge, easiness of access to economy from intellectual effort.

Some additional thoughts on information behaviour and practice

In the 1880's primary education in France was made free, non-clerical and mandatory. From a democratic point of view shouldn't there be a fair access to information; shouldn't this be as obvious and commonly shared as education for all? Information technology skills and access are 'public goods", because like education (and libraries), they are capable of providing positive externalities associated with economic growth and democratic governance. Just as widespread education raises the level of human capital in the economy, so do critical technology skills that are increasingly important throughout the economy particularly within the context of the knowledge-intensive economy that has developed in the advanced capitalist countries over the past few decades.

Information technology is now an integrated part of the workplace and the home for many French people. More than half of French households now use the Internet. While the use of information technology is growing rapidly, some segments of society remain largely disconnected from this trend: the issue of unequal access to information technology -or disparities in information technology based on demographic factors such as ethnicity, income, education, geography, age and gender challenge the French society. They are persistent reports that the poor, minorities, and others remain disconnected. The numbers contained in these reports are troubling indicators of a potential problem, but they say little about the causes or consequences of the problem and the possible remedies. For example, is it a problem of affordability or the ability to learn how to use the technology? Is it the ability to find and use the information on the Internet? Is it a lack of awareness of the possible uses and benefits of information technology? Much of the prior researches have focused less on these questions than on counting the number of people who have access to technology at home. This is a first step but it does a little to inform debate or to offer guidance to the whole society or to policymakers. By thinking about why disparities in information technology are a policy issue-about the possible consequences for society and for normative values such as equality of opportunity-we could also begin to think about the issue of access to provoke a fuller public discussion about what the aims and obligations of public policy should be.

Data showing that computer ownership and Internet access are lower among certain groups of the population have generated both a spate of public and private initiatives and a chorus of critics. The preponderance of programs, debate, and research has been restricted to the problem of access to technology. But having access to a computer is insufficient if individuals lack the skills they need to take advantage of technology. Two distinct concepts describe the knowledge and skills needed to use information technology effectively. Technical competencies are the skills needed to operate hardware and software, such as typing, using a mouse, and giving instructions to the computer. Information literacy is the ability to recognize when information can solve a problem or fill a need and to effectively employ information resources. Information literacy is needed to navigate the Internet for work, school, political or medical information, news, entertainment etc... Both technical competency and information literacy are needed to fully exploit the potential of information technology. Computers and the Internet are not just the lastest luxury item, or technological toys. The lack of fundamental technology-related skills-such as using a mouse and typing, using e-mail, locating information on the web, and using word processing and programs-is a clear indicator of the need for policy attention to this issue. What defines the access and skills divides as appropriates issues for public policy are the uses of information technology.

Computers and the Internet are among other things, tools for participation in the economy and the political arena. Technology disparities merit policy attention because of their implications for important normative issues such as equality of opportunity and democracy. We believe that the price of unequal technology skills and access may be to perpetuate or even widen existing social inequities. An educated and informed citizenry is more interested in and knowledgeable about political issues and is thus more interested in and knowledgeable about political issues and is more likely to vote, voice opinions, organize, volunteer on behalf of the community. Like schools and libraries the Internet has also become a resource for political and civic information. The challenge is how to offer assistance and access to those who lack skills, to those who are less likely to use public access sites, where assistance could be provided at least to those who are interested.

References

Naudé, N. (2000). *Advis pour dresser une bibliothèque*. Paris: Klincksieck.

Compaigne, B. M. (2001). *The digital divide: Facing a crisis or myth?* Cambridge, Mass.: MIT Press.

Lasfargue,Y. (2003). *Halte aux absurdités technologiques*. Paris: Editions d'Organisation.

Kleck, V. (2006). *Numérique et Cie: Sociétés en réseaux et gouvernance.* Paris: Editions Charles Léopold Mayer.